

Patent Claims

1. Electro-optical light modulation element comprising an electrode arrangement, at least one element for polarisation of the light,
5 and a mesogenic modulation medium, said light modulation element being operated at a temperature at which the mesogenic modulation medium in the unaddressed state is in an optically isotropic phase, characterized in that it comprises at least one optical compensation element comprising at least one
10 birefringent polymer film.
2. Electro-optical light modulation element comprising an electrode arrangement, at least one element for polarisation of the light, and a mesogenic modulation medium, said light modulation
15 element being operated at a temperature at which the mesogenic modulation medium in the unaddressed state is in an optically isotropic phase, characterized in that it comprises at least one optical compensation element comprising
 - 20 a) at least one optical retardation layer having an optical axis that is substantially parallel to the plane of the layer and to the surface of the mesogenic modulation medium, and/or
 - 25 b) at least one retardation layer having an optical axis that is substantially perpendicular to the plane of the layer and to the surface of the mesogenic modulation medium, and/or
 - 30 c) at least one retardation layer having an optical axis that is tilted at an angle θ of between 0° and 90° relative to the plane of the layer and to the surface of the mesogenic modulation medium, and/or
 - d) at least one optical biaxial retardation layer.
- 35 3. Electro-optical light modulation element according to at least one of claims 1 and 2, characterized in that the electrode

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arrangement is located on one side of the layer of the mesogenic modulation medium and during operation of the light modulation element generates an electric field having a significant component parallel to the plane of the mesogenic modulation medium.

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4. Electro-optical light modulation element according to at least one of claims 1 to 3, characterized in that the light during passage through the light modulation element in each case passes through at least one polariser before passing through the mesogenic modulation medium and after passing through the mesogenic modulation medium.
5. Electro-optical light modulation element according to at least one of claims 1 to 4, characterized in that it comprises at least two domains wherein the preferred orientation directions of the molecules in the mesogenic modulating medium are parallel to the plane of the medium and orthogonal to each other.
6. Electro-optical light modulation element according to at least one of claims 1 to 5, characterized in that the mesogenic modulation medium has a nematic liquid crystal phase.
7. Electro-optical light modulation element according to at least one of claims 2 to 6, characterized in that in said compensation element at least one of the optical retardation layers a) and/or b) and/or c) and/or d) is a birefringent polymer film.
8. Electro-optical light modulation element according to at least one of claims 1 to 7, characterized in that in said compensation element the birefringent polymer film or at least one of the optical retardation layers a) and/or b) and/or c) and/or d) comprises polymerised or crosslinked LC material.
9. Electro-optical light modulation element according to at least one of claims 2 to 8, characterized in that said compensation

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element comprises at least one layer a) comprising at least one positive A plate retardation film.

- 5 10. Electro-optical light modulation element according to at least one of claims 2 to 9, characterized in that said compensation element comprises at least one layer a) comprising at least one negative A plate retardation film.
- 10 11. Electro-optical light modulation element according to at least one of claims 2 to 10, characterized in that said compensation element comprises at least one layer b) comprising at least one positive C plate retardation film.
- 15 12. Electro-optical light modulation element according to at least one of claims 2 to 11, characterized in that said compensation element comprises at least one layer c) comprising at least one positive O plate retardation film.
- 20 13. Electro-optical light modulation element according to at least one of claims 2 to 12, characterized in that said compensation element comprises at least one layer d) comprising at least one biaxial retardation film.
- 25 14. Electro-optical light modulation element according to at least one of claims 2 to 13, characterized in that said compensation element comprises at least layer a) comprising at least one positive A plate retardation film and at least one layer b) comprising at least one positive C plate retardation film.
- 30 15. Electro-optical light modulation element according to at least one of claims 2 to 14, characterized in that said compensation element comprises at least two layers c) comprising at least one positive splayed O plate retardation film with the average tilt of both layers being in the same plane and having opposing
- 35 direction.

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16. Electro-optical light modulation element according to at least one of claims 2 to 15, characterized in that said compensation element comprises at least two layers d) comprising at least one biaxial retardation film.
17. Electro-optical display comprising one or more light modulation elements according to at least one of claims 1 to 16.
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18. Use of a light modulation element or display according to at least one of claims 1 to 17 for the display of information or of video signals, as monitor, television or computer monitor, or for projection systems.
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19. Compensation element as defined in at least one of claims 1, 2 and 7 to 16 for use in a light modulation element or display according to at least one of claims 1 to 17.
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